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DESCRIPTION

SCHEDULE MANAGEMENT SYSTEM WHICH PERFORMS TRAVEL EXPENSE
ADJUSTMENT PROCESSING

Technical Field

This invention relates to schedule management, and more particularly to a schedule management system which performs adjustment of travel expenses involved in an actual outwork in accordance with a schedule planned in advance.

Background Art

A schedule management system is known at present which allows schedules of persons to be inputted and allows such persons to confirm their schedules by themselves or informs another person of the schedules.

Meanwhile, if an employee of a company performs an outwork, adjustment of travel expenses involved in the outwork is performed in the form of outwork travel expense adjustment after the outwork has been performed. In the travel expense adjustment of the outwork, information of the outwork date, the destination, expenses and so forth is inputted to issue a travel expense slip, and the travel expenses and the outwork expenses are adjusted with the

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travel expense slip.

It is an object of the present invention to provide a schedule management system and a schedule management method which performs a adjustment job of travel expenses for an outwork based on data inputted to the schedule management system.

Disclosure of Invention

In order to attain the object described above, according to the present invention, the following construction is employed.

In a schedule management system in which a plurality of terminal devices are interconnected over a line for performing travel expense adjustment processing, at least one of the plurality of terminals serves as a management terminal device which manages schedules of users managed in the system on an external storage apparatus; each of the plurality of terminal devices other than the management terminal device serves as a schedule inputting terminal having inputting means for inputting schedule information; the schedule management system comprises an external storage apparatus for storing schedule information inputted from the inputting means of the schedule inputting terminal and travel expense adjustment information representative of whether or not travel expense adjustment has been

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performed; and the schedule management system further comprises non-adjusted travel expense information search means for comparing the travel expense adjustment information and the schedule information with each other to search for non-adjusted travel expense information.

Brief Description of Invention

FIG. 1 is a flow chart illustrating a flow of processing of an embodiment according to the present invention; FIG. 2 is a view illustrating a recording form of schedule information used in the embodiment of the present invention; FIG. 3 is a view illustrating numerals and places of a "classification" and a "status" in the schedule information of the embodiment of the present invention; FIG. 4 is a view showing a travel expense slip in the embodiment of the present invention; FIG. 5 is a view illustrating a record of information of a header part of the travel expense slip in the embodiment of the present invention; FIG. 6 is view illustrating a record of information of a particulars part of the travel expense slip in the embodiment of the present invention; FIG. 7 is a view illustrating a relationship between a combination of the "classification" and the "status" for a schedule information record and a judgment of whether or not a bill relates to an outwork; FIG. 8 is a view showing an example

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of a display screen in the embodiment of the present invention; FIG. 9 is a view illustrating a form of mail when travel expense adjustment information is sent by mail in the embodiment of the present invention; and FIG. 10 is a view showing a record form of an attachment file when travel expense adjustment information is sent as an attachment file to a sheet of a work flow in the embodiment of the present invention.

Best Mode for Carrying out the Invention

In the following, the present invention is described with reference to the drawings.

FIG. 1 is a flow chart illustrating a flow of processing of an embodiment according to the present invention.

First, processing from inputting to storage of schedule information is described.

Schedule information inputting means 110 is used to input commands such as "updating", "preselection", "reference", "cancellation" and so forth which are information representative of in what manner a user of a schedule wants to treat the schedule. It is to be noted that in what manner a user of a schedule wants to treat the schedule specifically signifies, in regard to "updating", a case wherein the user by itself inputs a schedule of the

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user itself, and in regard to "preselection", a case wherein the user inputs a schedule of another person. It further signifies, in regard to "reference", a case wherein the user merely sees schedules of the user itself and other persons which have been inputted till now. If a schedule is inputted by any other than the user itself with the "preselection" command, then the person of the schedule can make a reply of whether or not the person approves the schedule preselection. The reply is performed by picking up a pertaining one of choices "approved, not approved, pending" displayed as a pop-up menu when the schedule is displayed. Further, the preselection source can cancel a preselected schedule with the "cancellation" command.

For the "updating" and "preselection" commands among the commands given above, schedule information of an actual schedule is inputted to the schedule information inputting means 101. The schedule information is specifically a name number for identifying an object person of a schedule, a schedule date, a start time, an end time, a schedule business (conference, explanation meeting or the like), a place and so forth.

It is to be noted that the place is composed of two components of a location of an object person of a schedule and a classification. The location is a destination of an object person of the schedule. The classification is a

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classification of the destination and is inputted by picking up a pertaining one of choices "captive building, client, different captive building, transfer, other" displayed as a pop-up menu upon inputting.

The schedule information inputting means is connected to a server apparatus, and schedule information editing means 102 in the server apparatus edits schedule information inputted by the schedule information inputting means to information of a record form for being stored onto an external storage apparatus connected to the server apparatus.

FIG. 2 is a view illustrating the record form of schedule information stored in the external storage apparatus. The record form of the schedule information includes information of a name number 201, a schedule date 202, a start time 203, an end time 204, a schedule business 205, a place (location 206, classification 207), and a status 208. Of the schedule information, the information of the name number 201, schedule date 202, start time 203, end time 204, schedule business 205 and place (location 206) which are information specifying a person is schedule information (the name number 201, schedule date 202, start time 203, end time 204, schedule business 205 and location 206) inputted to the schedule information inputting means and stored as it is, but the information of the

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classification 207 is stored after a value corresponding to the location 206 is converted using such a table as shown in FIG. 3(a).

The status 208 is described below.

In the case of "preselection" by which a schedule is inputted by any other than the person itself from the schedule information inputting means 101, the person itself whose schedule has been inputted makes a reply of whether or not the person approves the schedule. The reply is made by picking up a pertaining one of choices "approved, not approved, pending" displayed as a pop-up menu when the schedule is displayed. It is to be noted that a person who has preselected a schedule of another person can cancel the inputted schedule.

The status 208 indicates such an inputted state of a schedule as described above and includes six types of "registered, preselected, approved, not approved, pending, cancelled". The "registered" indicates a case where "updating" is inputted from the schedule information inputting means 101 and signifies that the schedule has been inputted by the person itself. The "preselected" indicates a case wherein "preselection" is inputted from the schedule information inputting means 101 and signifies that the schedule has been inputted by another person and that the destination party of the preselection has not made

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a reply to the schedule. The "approved" signifies that the destination party of the preselection has approved, the "non-approved" signifies that the destination party of the preselection has not approved the "pending" signifies that the destination party of the preselection has pended its reply, and the "cancelled" signifies that the destination party of the preselection has cancelled its approval of the schedule.

The schedule information inputted from the schedule information inputting means 101 is edited to information of the record form for storing the information onto the external storage apparatus by the schedule information editing means 102.

FIG. 2 illustrates an example of schedule information records. A record for one schedule information includes a name number 201, a schedule date 202, a start time 203, an end time 204, a schedule business 205, a place (location 206, classification 207) and a status 208.

Schedule information storage means 103 writes a record edited by the schedule information editing means 102 into an external storage apparatus 104. In the external storage apparatus, records of schedule information are sorted with the name number and the schedule date.

Now, a travel expense slip and travel expense adjustment information 106 are described.

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The travel expense slip is a slip prepared, when a person works at a place other than an ordinary working place by an outwork, in order for the outwork person to have travel expenses to an outwork destination and outwork expenses adjusted.

(a) and (b) of FIG. 4 show examples of a travel expense slip prepared by an employee whose name number of the schedule information shown in FIG. 2 is "001106866".

The travel expense slip 401 is composed of a slip header part 402 and a slip particulars part 403. The slip header part 402 is filled with information necessary to specify a preparing person of the slip such as the name, the name number or the name of the section of the outwork person, the submitted date of the slip, a signature indicating that the slip is approved by a pertaining superior, a signature of the person itself indicating that the slip is prepared by the person itself, a slip number which is information of a slip number applied for identification of the individual slip and so forth.

The slip particulars part 403 is filled with the outwork date, a day of the week, a start point, a return point, a start time, a return time, the name of the outwork destination, the name of the city, ward, town or village of the outwork destination, a business, a traffic route, a daily allowance, travel expenses of details such as a fare

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for a train or a bus, and so forth.

For one record of the slip particulars of the slip particulars part 403, information for one day is used as one record (one case). Description is given taking a record of the second slip particulars of (a) of FIG. 4 as an example. The record of the second slip particulars of (a) shown in FIG. 4 is for adjustment of an outwork for January 16th. However, according to the schedule information file of FIG. 2, two records 212, 213 must be present as records for January 16th from the schedule date 202. Further, it is determined whether or not the two records are for an outwork. While a detailed determination method is hereinafter described with reference to FIG. 7, it is determined in advance, for example, based on table information shown in FIG. 3 what combination of values indicate an outwork and what combination of values indicates no outwork. In the example of FIG. 3(a), for example, it is determined that the "captive building" which exhibits the value "0" does not signify an outwork, but the "client" or the "different captive building" which exhibits the value "1" or "2" signifies an outwork, and a judgment is made based on the determination. Consequently, with regards to the two records 212 and 213, since the values of the division classification 207 exhibit "1" and "2", respectively, it is judged that both of the records 212 and

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213 are for an outwork. In this manner, in the particulars of the travel expense slip, an outwork for one day is recorded collectively as particulars for January 16th. For the outwork destination name and the address name as well as the business, contents of one of outworks are recorded as a representative. Although, in the example of (a) of FIG. 4, the outwork to the "F bank" of the record 213 where the start time of the outwork is the earliest is recorded gently, naturally the outwork which exhibits the last start time may be recorded instead.

As a general flow of processing of a travel expense slip, after a travel expense slip is prepared, the thus prepared travel expense slip is sent through a superior to the slip preparing person to an accounting department, in which the recorded contents of the travel expense slip are checked and, if there is no omission, no error or the like with regard to items to be recorded, the travel expense slip is approved. The information of the approved travel expense slip is stored onto the external storage apparatus 106. The information of the travel expense slip is stored separately in the slip header part and the slip particulars part.

FIG. 5 illustrates an example of records of slip headers stored separately. A record of the slip header includes a slip number, a submission date, a name number

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and so forth. The slip number is a number applied by the accounting department when the travel expense slip is received, and is used for identification of the individual slip. It is to be noted that, in the example of FIG. 5, slip numbers are sorted and stored in an ascending order.

(a) and (b) of FIG. 4 show actual travel expense slips prepared already. The travel expense slip of (a) of FIG. 4 corresponds to a record 501 shown in FIG. 5, and the travel expense slip of (b) of FIG. 4 corresponds to another record 502 shown in FIG. 5.

(a) and (b) of FIG. 6 show an example of travel expense slip particulars records corresponding to the travel expense slip particulars parts of the travel expense slips shown in (a) and (b) of FIG. 4, respectively.

The travel expense slip particulars record includes an outwork date, a start time, a return time, an outwork destination name and the name of a city, ward, town or village of the destination, a traffic route, a daily allowance, travel expenses for different items and so forth. It is to be noted that travel expense slip particulars records are sorted in a unit of the same slip number.

Processing contents of non-adjusted travel expense search means 105 which performs a search of non-adjusted travel expenses are described.

The non-adjusted travel expense search means 105

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collates, when a command inputted from the schedule information inputting means 101 is "reference" to schedule information, based on a name number inputted from the schedule information inputting means 101, schedule information records stored on the external storage apparatus with the travel expense slip header records and the travel expense slip particulars records and extracts, from among schedule information records for outworks and those schedule information records which are judged to be for outworks, those records which do not include a travel expense slip particulars record whose schedule date and outwork date coincide with each other.

A processing procedure performed by the non-adjusted travel expense search means 105 is described more particularly with reference to FIGS. 2 to 6.

The present embodiment is an example wherein non-adjusted travel expenses of an employee whose name number is "001106866" are extracted. The schedule information of the employee is such as illustrated in FIG. 2, and it is assumed that the travel expense slips prepared by the employee are such as illustrated in (a) and (b) of FIG. 4 and the travel expense adjustment information is such as illustrated in (a) and (b) of FIGS. 5 and 6.

First, from the travel expense adjustment information of FIGS. 5 and 6, a travel expense adjustment

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situation of the employee who is an object of the search for non-adjusted travel expenses is checked.

In order to extract adjusted travel expense slips of the employee of the search object, the travel expense slip header record of FIG. 5 is search for using the name number "001106866" of the employee of the retrieval object as a key. If the search is performed from among the travel expense slip header records of FIG. 5 using the name number "001106866" as a search key, then the two records of "record 501" and "record 502" are hit. Then, in order to extract particulars of the thus hit travel expense slips, a search for a travel expense slip particulars record is performed using the slip numbers (slip No.) of the thus hit travel expense slip header records as a key, that is, using the slip numbers "97010009" and "97010013" of the travel expense slip particulars records "record 501" and "record 502" as a key, and five records 601 to 605 are extracted as coincident records. Adjusted expenses of the employee of the search object can be extracted in this manner.

Meanwhile, from the schedule information file, an outwork situation of the employee of the name number "001106866" is checked. First, schedule information records are searched using the name number "001106866" and the system date as keys to extract those schedule information records wherein the name number is coincident

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and the schedule date is a date in the past with respect to the system date. In the present example, if the system date is "January 25, 1997", then fourteen records 209 to 222 are extracted. Then, in order to extract records of outwork schedules from among the extracted schedule information records, a search of the schedule information records 209 to 222 is performed using values of the classification and the status as keys.

The judgment of whether or not a schedule is for an outwork is performed based on a combination of the values of the classification 207 and the status 208. Criteria are illustrated in FIG. 7. The criteria are an abstract of relationships between combinations of values which can be assumed by the classification and the status and how to judge whether or not a schedule is for an outwork for the individual cases.

Referring to FIG. 7, the "outwork" signifies that the schedule is judged as an outwork schedule. Those records which are for a schedule registered by the person itself and whose classification is the client, the different captive building, the non-captive building or the transfer and those records which are for a schedule with regard to which a reply of approval to preselection is obtained and whose division is the client, the different captive building, the non-captive building and the transfer

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are judged as records for an "outwork".

The "other than outwork" signifies that the record is judged not to be for an outwork schedule. This judgement is made irrespective of the classification and made for those records whose classification is the captive building or some other.

The "obscure" signifies that it cannot be judged whether or not the record is for an outwork. This judgment is made for those records wherein, although the classification exhibits one of the client, the different captive building, the non-captive building and the transfer from which the record can be judged to be for an outwork, no reply is obtained to a preselection or a schedule is not established because a reply is pended.

The "out of object" signifies that there is no need of judgement of whether or not the record is for an outwork and the record is outside the range of an object of search. This judgment is made for those records of schedules which have not been approved to preselections or cancelled by the preselection sources.

Based on the criteria for whether or not a record is for an outwork illustrated in FIG. 7, the nine records 211, 212, 213, 214, 216, 217, 218, 219 and 220 are judged to be schedule information records for an outwork, the one record 210 is judged to be a schedule information record for any

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other than an outwork, the one record 215 is judged to be obscure, and the three records 209, 221 and 222 are judged to be schedule information records which are out of object.

Those records which are judged to be for an outwork and judged to be obscure are determined as an object of a non-adjusted travel expense search. The reason why those records which are judged to be obscure are included in the object of the search is that they are records which may possibly be for an outwork. The present system leaves room for judgment by a human being using succeeding means with regard to those schedules which cannot be judged by the system.

Here, collation between the travel expense slip particulars records 601 to 605 narrowed down as records of a search object and the schedule information records 211 to 222 is performed. In the collation, matching is performed using the outwork date of the travel expense slip particulars record and the schedule date of the schedule information record as keys.

As a result of the collation, the travel expense slip particulars records 601 to 605 and the schedule information records 212, 213 and 214, 216 and 217, 218, and 219 and 220 coincide with each other, respectively. The schedule information records 211 and 215 do not exhibit coincidence between the schedule date with the outwork date

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with any of the travel expense slip records, and are finally extracted by the non-adjusted travel expense search means 105. If some record or records are extracted by the non-adjusted travel expense search means 105, then schedule message display/reply means 107 displays the schedule information and a message regarding the record or records extracted by the non-adjusted travel expense search means 105 on a schedule message display reply screen. If no record is extracted by the non-adjusted travel expense search means 105, then the schedule message display/reply means 107 displays only the schedule information on a schedule display screen.

FIG. 8 shows an example of the display reply screen by the schedule message display/reply means. The display reply screen includes a schedule display section 801 for displaying a schedule and a message display section 802 for outputting a message based on the schedule information record or records extracted by the non-adjusted travel expense search means 105.

The schedule display section 801 displays an arbitrary form of schedule information.

The message display section 802 displays, based on a record extracted by the non-adjusted travel expense search means 105, the messages "The travel expenses for the outwork dated ____ (month), ____ (day) have not been adjusted."

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and "Should the travel expenses be adjusted? and has set therein an input column 811 which is used to input a reply regarding whether or not adjustment of the travel expenses should be performed. If adjustment of the travel expenses should be performed, then "y" will be inputted to the input column 811, but if such adjustment should not be performed, "n" will be inputted to the input column 811 from a keyboard. If "y" is inputted to the input column, then changeover to travel expense adjustment information inputting means 108 is performed, but if "n" is inputted, then the present schedule system ends its operation.

If a key any other than "y" or "n" is inputted, then the message "The inputted key is invalid: please input "y" or "n"" is displayed.

In FIG. 8, messages 803 and 804 which correspond to the schedules of the records 211 and 215 extracted by the non-adjusted travel expense adjustment means 105 are displayed. The message 803 corresponds to the record 211 and is displayed because the system judges that the travel expenses are not adjusted with regard to the record 211. The message 804 corresponds to the record 215 and is displayed in order to leave the judgment for necessity of adjustment of the travel expenses to the user.

At underlined portions of the messages, edited schedule dates and locations of the records extracted by

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the non-adjusted travel expense search means 105 are displayed. In FIG. 8, at the portions 805 to 806 and 808 to 809, values obtained by editing the months and the days based on the schedule dates of the schedule information records 211 and 215 are displayed, and at the locations 807 and 810, acquired locations of the schedule information records 211 and 215 are displayed.

Finally, processing from preparation to issuance of a travel expense slip is described.

The travel expense adjustment information inputting means 108 inputs information necessary for adjustment of travel expenses. The information necessary for adjustment of travel expenses is the same as the information recorded on a travel expense slip, and includes the submitted date of the slip, the name of the section of the outwork person, the name number, the name, the outwork date, a day of the week, a start point, a return point, a start time, a return time, the name of the outwork destination, the name of the city, ward, town or village of the outwork destination, a business, a traffic route, a daily allowance, travel expenses of details such as a fare for a train or a bus, and so forth.

Based on the information of the name number, the outward destination and so forth of the travel expense adjustment information inputted from the travel expense

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adjustment information inputting means 108, travel expense adjustment information search means 109 extracts, from among the travel expense slip header records and the travel expense slip particulars records stored on the external storage apparatus, those travel expense slip particulars records which have values equal to the information inputted from the travel expense adjustment information inputting means 109 such as the name number and the outwork destination, and displays the extracted travel expense particulars records on an input screen for travel expense adjustment information.

If a record whose contents are nearest to the travel expense adjustment information to be adjusted such that the outwork destination is the same is selected from among the displayed records, then information of the outwork date, the start time, the traffic route and so forth of the selected record is set to an input column of the input screen. Then, only that information which is different from that of the outwork with regard to which adjustment is to be performed such as the outwork date is re-inputted. Consequently, there is no need of manually inputting all adjustment information.

Travel expense slip editing means 110 edits the information inputted from the travel expense adjustment information inputting means 108 so that it has a form for

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transmission using a work flow system. The work flow system is software for supporting automation of a circulation process in an office work which is composed of circulation of documents called accounting department traveling expense slips from different sections. The travel expense slip editing means 110 edits the information inputted from the travel expense adjustment information inputting means 108 into information of a record form of a travel expense slip file to be circulated in the work flow system.

The record file edited by the travel expense slip editing means 110 is transmitted to a travel expense slip in-charge section, personnel or the like set in advance by the work flow system.

It is to be noted that, while, in the embodiment described above, travel expense adjustment information inputted from the travel expense adjustment information inputting means 108 is transmitted by a work flow, the transmission is not limited this, and travel expense adjustment information may be sent by mail. In this instance, the travel expense slip editing means 110 edits the travel expense adjustment information to information of a form of mail as seen in FIG. 10. The travel expense slip editing means 110 edits information inputted from the travel expense adjustment information inputting means 108

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into a body 1002 of mail and edits the travel expense slip in-charge section, personnel or the like as a unique transmission destination of the system on mail header 1001. Travel expense slip transmission means 111 transmits the mail to the destination set on the mail header based on the information edited by the travel expense slip editing means 110.

Industrial Applicability

According to the present invention, in order to extract travel expenses which have not been adjusted, non-adjusted travel expense search means for collating information of a schedule inputted by a schedule management function and adjustment information of travel expenses inputted by a traveling adjustment function with each other is provided. Consequently, the following effects are achieved.

- (1) An omission of travel expense adjustment when an outwork is performed can be extracted.
- (2) Further, by displaying the extracted information on a schedule display screen, a user can be informed the non-adjustment information of the travel expenses. Accordingly, the user can be informed the non-adjusted information of the travel expenses.
- (3) A miss and a delay of travel expense adjustment

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processing of a user can be prevented, and in an accounting section, travel expense adjustment processing which is likely to be concentrated on a term-end can be performed as occasion calls and the working burden can be dispersed.

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